



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/788,990	02/27/2004	Teck Kheng Lee	2269-5772US (01-1085.00/U)	6857
24247	7590	07/29/2005		EXAMINER HO, TU TU V
TRASK BRITT P.O. BOX 2550 SALT LAKE CITY, UT 84110			ART UNIT 2818	PAPER NUMBER

DATE MAILED: 07/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/788,990	LEE ET AL.
Examiner	Art Unit Tu-Tu Ho	2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 03 June 2005.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-50 is/are pending in the application.
4a) Of the above claim(s) 1-14 and 43-50 is/are withdrawn from consideration.
5) Claim(s) _____ is/are allowed.
6) Claim(s) 15-42 is/are rejected.
7) Claim(s) _____ is/are objected to.
8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 27 February 2004 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) Notice of Informal Patent Application (PTO-152)
6) Other: _____.

DETAILED ACTION

Oath/Declaration

1. The oath/declaration filed on 02/27/2004 is acceptable.

Election/ Restriction

2. Applicant's election without traverse of Invention II; claims 15-42, in the reply filed on 06/03/2005 is acknowledged.
3. Claims 1-14 and 43-50 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 06/03/2005, as noted above.

Drawings

4. Figures 1A and 1B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. §103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 15-24, 26-37, and 39-40 are rejected under 35 U.S.C. §103(a) as being unpatentable over Kasai et al. U.S. Patent 5,750,421 (the '421 reference).

The '421 reference discloses in Figs. 14, 30, and 31 and respective portions of the specification a mold gate of a tape substrate and an inherent method for forming substantially as claimed.

Referring to **claim 15**, the reference discloses a method for forming a mold gate of a tape substrate, comprising:

forming an aperture (112, 113) of the mold gate (column 17, lines 54-60, "holes 112 are provided along each side of the opening 111, so as to enable upward and downward flow of the resin at the time of the molding. In addition, a second hole 113 is provided at one position between two adjacent outer lead holes 95, to enable flow of the resin", which holes meet the definition of a mold gate) in a flexible dielectric film (polyimide tape carrier 91, column 11, lines 40-50) of the tape substrate; and

patterning conductive lines (93c) at least some of which function as a support structure of the mold gate from a conductive film (copper film, column 11, lines 47-52).

However, the reference does not disclose patterning a support structure of the mold gate, and thus fails also to disclose concurrently patterning the support structure of the mold gate and the conductive lines from the same conductive film as claimed.

Nevertheless, as noted above, the reference teaches patterning conductive lines (93c), at least some of which function as a support structure of the mold gate. The conductive lines 93c of the reference are functionally the same as the claimed conductive lines (for example, 34, Fig. 2, present invention) and the support structure (44), therefore the change from one (conductive lines 93c) to the other (conductive lines 34 and support structure 44) would have been obvious to one of ordinary skill in the art at the time the invention was made.

Referring to **claim 26** and using the same reference characters, citations, and interpretations as detailed above for claim 15 where applicable, the reference discloses a method for fabricating a tape substrate, comprising:

providing a flexible dielectric film;
forming an aperture of a mold gate in said flexible dielectric film; and
forming conductive traces (93c) at least some of which function as a support element of said mold gate from a single conductive film (copper film) laminated onto a surface of said flexible dielectric film.

However, the reference does not disclose forming a support element of the mold gate, and thus fails also to disclose concurrently forming the support element of the mold gate and the conductive traces from the same single conductive film as claimed.

Nevertheless, as noted above, the reference teaches forming conductive traces (93c), at least some of which function as a support element of the mold gate. The conductive traces 93c

of the reference are functionally the same as the claimed conductive traces (for example, 34, Fig. 2, present invention) and the support element (44), therefore the change from one (conductive traces 93c) to the other (conductive traces 34 and support element 44) would have been obvious to one of ordinary skill in the art at the time the invention was made.

Referring to **claim 16**, the reference further discloses securing said conductor film to said flexible dielectric film (column 11, lines 39-52, "bonded").

Referring to **claims 17 and 20**, although the reference does not disclose that the securing is effected before or following said forming as claimed, effecting the securing before or following said forming were just various ways one of ordinary skill in the art at the time the invention was made would invariantly provide, therefore would have been obvious.

Referring to **claims 18-19 and 21-24**, although the reference does not disclose that said forming said aperture is by etching, etching with a mask, or mechanically die cutting as claimed, forming said aperture in said flexible film by etching, by etching with a mask, or by mechanically die cutting as claimed were just various ways one of ordinary skill in the art at the time the invention was made would invariantly perform, therefore would have been obvious.

Referring to **claims 27-30**, although the reference does not disclose that said providing said flexible dielectric film comprises providing said flexible dielectric film with said single conductive film prelaminated or without said single conductive film onto said surface thereof as claimed, providing said flexible dielectric film comprising providing said flexible dielectric film with said single conductive film prelaminated or post-laminated (for example, after forming the aperture) onto said surface thereof were just various ways one of ordinary skill in the art at the time the invention was made would invariantly perform, therefore would have been obvious.

Referring to **claims 31-37 and 39-40**, although the reference does not disclose that said forming said aperture is by etching, etching with a mask, or mechanically die cutting as claimed, forming said aperture in said flexible film by etching, by etching with a mask, or by mechanically die cutting as claimed were just various ways one of ordinary skill in the art at the time the invention was made would invariably perform, therefore would have been obvious.

6. **Claims 15-42** are rejected under 35 U.S.C. §103(a) as being unpatentable over Tsubosaki et al. U.S. Patent Application Publication 20020180010 (the '010 reference) in view of Ueda et al. U.S. Patent 5,196,917.

The '010 reference discloses in the figures, particularly Figs. 1-3, and respective portions of the specification a mold gate of a tape substrate and an inherent method for forming substantially as claimed.

Referring to **claim 15**, the reference discloses a method for forming a mold gate of a tape substrate, comprising:

providing a mold gate (generally defined by 1a/1a3/5c/1a2, Fig. 3, paragraph [0065]);
and

concurrently patterning conductive lines (1c) and a support structure (1a3) of the mold gate from a conductive film (copper film, paragraph [0066]).

However, the reference fails to teach forming an aperture for the mold gate as claimed.

Ueda, in also disclosing a method for forming a mold gate (opening 15 through which molding resin flows, column 4, lines 5-10) of a tape substrate (1/4, Figs. 1's), teaches forming an aperture (15) of a mold gate in a flexible dielectric film (1) so that the thickness t3 (Fig. 3) of the

resin corresponding to the gate is small so as to reduce the risk of chipping the molding resin during the gate breaking process (column 5, first paragraph).

Therefore, it would have been obvious to modify the '010 reference's process such that it includes a step of forming an aperture for the mold gate in the flexible dielectric film (polyimide resin 1a, paragraph [0064]).

One would have been motivated to make such a change in view of the teachings in Ueda that such an addition reduces the risk of chipping the final molding resin during the gate breaking process.

Referring to **claim 26** and using the same reference characters, citations, and interpretations as detailed above for claim 15 where applicable, the reference discloses a method for fabricating a tape substrate, comprising:

providing a flexible dielectric film (1a); and
substantially concurrently forming a support element (1a3) of said mold gate and conductive traces (1c) and from a single conductive film (copper film) laminated onto a surface of said flexible dielectric film.

However, the reference fails to teach forming an aperture for the mold gate as claimed.

Ueda, in also disclosing a method for forming a mold gate (opening 15 through which molding resin flows, column 4, lines 5-10) of a tape substrate (1/4, Figs. 1's), teaches forming an aperture (15) of a mold gate in a flexible dielectric film (1) so that the thickness t3 (Fig. 3) of the resin corresponding to the gate is small so as to reduce the risk of chipping the molding resin during the gate breaking process (column 5, first paragraph).

Therefore, it would have been obvious to modify the '010 reference's process such that it includes a step of forming an aperture for the mold gate in the flexible dielectric film.

One would have been motivated to make such a change in view of the teachings in Ueda that such an addition reduces the risk of chipping the final molding resin during the gate breaking process.

Referring to **claim 16**, the reference further discloses securing said conductor film to said flexible dielectric film (paragraph [0063], "bonded").

Referring to **claims 17 and 20**, although the combined teachings does not disclose that the securing is effected before or following said forming as claimed, effecting the securing before or following said forming were just various ways one of ordinary skill in the art at the time the invention was made would invariantly provide, therefore would have been obvious.

Referring to **claims 18-19 and 21-24**, although the combined teachings does not disclose that said forming said aperture is by etching, etching with a mask, or mechanically die cutting as claimed, forming said aperture in said flexible film by etching, by etching with a mask, or by mechanically die cutting as claimed were just various ways one of ordinary skill in the art at the time the invention was made would invariantly perform, therefore would have been obvious.

Referring to **claims 27-30**, although the reference does not disclose that said providing said flexible dielectric film comprises providing said flexible dielectric film with said single conductive film prelaminated or without said single conductive film onto said surface thereof as claimed, providing said flexible dielectric film comprising providing said flexible dielectric film with said single conductive film prelaminated or post-laminated (for example, after forming the

aperture) onto said surface thereof were just various ways one of ordinary skill in the art at the time the invention was made would invariably perform, therefore would have been obvious.

Referring to **claims 31-37 and 39-40**, although the combined teachings does not disclose that said forming said aperture is by etching, etching with a mask, or mechanically die cutting as claimed, forming said aperture in said flexible film by etching, by etching with a mask, or by mechanically die cutting as claimed were just various ways one of ordinary skill in the art at the time the invention was made would invariably perform, therefore would have been obvious.

Referring to **claim 38**, the combined teachings further discloses that forming said aperture is effected at a location which is external to an outer boundary of an area of said flexible dielectric film where a finished tape substrate is to be located (Ueda, Fig. 3).

Referring to **claim 42**, the '010 reference further discloses plating conductive structures of said support element (paragraph [0066]).

Referring to **claims 25 and 41**, the combined teachings discloses a method for forming a mold gate of a tape substrate as claimed but fail to teach coating sidewalls of said aperture (15, Fig. 1B, Ueda) with a material that reduces or prevents adhesion of a packaging material to the mold gate.

However, the '010 reference, as noted above, teaches coating the conductive structures of said support element (1a3) of said mold gate - which mold gate generally defined by 1a/1a3/5c/1a2, Fig. 3, paragraph [0065], which is modified in view of Ueda to contain also the aperture 15, as detailed above, which modified mold gate effectively could be described generally as aperture-15/ gold-plated-1a3/5c/1a2 – with a gold material so as to reduce adhesivity between the molding resin packaging material to the mold gate to facilitate peel-off

separation between the resin of the final product and that of the molding apparatus (tape carrier 1's resin and sub-runner 5c's resin) (paragraphs [0066] and [0067]).

Therefore, it would have been obvious to modify the combined teachings' method such that the method includes the step of coating sidewalls of said modified aperture (15) with a material, such as gold, that reduces or prevents adhesion of a packaging material to the aperture of the mold gate. One of ordinary skill in the art would have been motivated to make such a change in view of the teachings in the references that such a coating reduces adhesivity between the molding resin packaging material to the sidewalls of said modified aperture of said modified mold gate to facilitate peel-off separation between the resin of the final product and that of the molding apparatus.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tu-Tu Ho whose telephone number is (571) 272-1778. The examiner can normally be reached on 6:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DAVID NELMS can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TH

Tu-Tu Ho
July 27, 2005